

## Bihar Public Service Commission

Drug Inspector Written (Objective) Competitive Examination (Advt. No. 09/2022)

**(Examination Date : 07.07.2023)**

### **PROVISIONAL ANSWER KEY : Pharmaceutics (Paper-1, Unit I)**

आयोग द्वारा उपलब्ध कराये गये उत्तर पूर्णतः औपबंधिक (Provisional) हैं। उपर्युक्त निर्धारित तिथि तक आपत्तिकर्ताओं से प्राप्त आपत्ति की गहन समीक्षा विषय विशेषज्ञों की समिति द्वारा की जायेगी और गहन समीक्षोपरान्त सभी प्रश्नों का अन्तिम आदर्श उत्तर तैयार किया जायेगा। विषय विशेषज्ञों की समिति द्वारा तैयार किये गये उक्त अन्तिम आदर्श उत्तर का आयोग द्वारा अनुमोदनोपरान्त उसके आधार पर ओ.एम.आर. उत्तर पत्रक (OMR Answer Sheet) का मूल्यांकन किया जायेगा।

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks   |
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| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |
| 1            | A      | 17           | B      | 24           | C      | 41           | D      | <p>▲Procedure and Criteria for Delayed-Release Tablets and Capsules (tablets or capsules that are formulated with acid-resistant or enteric coatings) PROCEDURE FOR DELAYED - RELEASE TABLETS AND CAPSULES▲USP 1-Aug-2019 Place 1 ▲dosage unit ▲USP 1-Aug-2019 in each of the 6 tubes of the basket. ▲If the dosage units are not sugar-coated, proceed to <b>the Acid stage</b>. If testing tablets that have a soluble external sugar coating, immerse the basket in water at room temperature for 5 min and then immediately proceed to the Acid stage. If specified in the monograph, add 1 disk to each tube. Acid stage Immersion fluid:0.1 M hydrochloric acid, or simulated gastric fluid TS, or as specified in the monograph Temperature:37 ± 2° Time:1 h If after 1 h no dosage unit shows evidence of disintegration, cracking, or softening, proceed with the Buffer stage. Buffer stage Immersion fluid:pH 6.8 phosphate buffer, or simulated intestinal fluid TS, or as specified in the monograph Temperature:37 ± 2° Time : As specified in the individual monograph -- á701ñ DISINTEGRATION ©2019 The United States Pharmacopeial Convention.</p> |
| 2            | C      | 18           | D      | 25           | A      | 42           | B      | Chewable tablets are meant to be chewed. The act of mastication by teeth provides the disintegration – hence no disintegrants would be required in chewable tablets.  |

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|              |        |              |        |              |        |              |        | <p>- Rapid dissolution increases the rate of absorption of the active ingredient by the body, producing the desired therapeutic action. Note that tablets that are labelled as chewable generally do not require a disintegrant to be incorporated in the formulation.</p> <p>-- An Overview of Disintegrants<br/> <a href="https://www.lfatabletpresses.com/articles/overview-of-disintegrants">https://www.lfatabletpresses.com/articles/overview-of-disintegrants</a></p> <p>- Chewable tablet does not require addition of disintegrant.</p> <p>-- Emerging Trends of Disintegrants used in Formulation of Solid Dosage Form Debjit Bhowmik, Chiranjib. B, Jitendra Yadav, R. M. Chandira, K. P. Sampath Kumar*<br/>                     Der Pharmacia Lettre 2010: 2 (1) 495-504</p> |
| 3            | B      | 19           | C      | 26           | D      | 43           | A      | <p>Cam tracks are other critical tablet compression machine parts that play an integral role in ensuring smooth tableting process. The main work of the cam tracks is to guide the upper and lower punches in different stages in the tablet compression process.22-Apr-2020.<br/> <u>Working &amp; Principle of Tablet Compression machine</u><br/> <u>Pharmaceutical Updates</u><br/> <a href="https://pharmaceuticalupdates.com/2020/04/22/worki...">https://pharmaceuticalupdates.com/2020/04/22/worki...</a></p>   |
| 4            | D      | 20           | D      | 27           | D      | 44           | D      | <p>But there are also ways to address capping without changing the formulation. Capping potential can sometimes be reduced by adjusting the tablet press parameters. One example is by adding pre-compression force. Pre-compression, or de-aeration, is a compression stage before the main compression event where the final compact is made. A low amount of pre-compression force will allow the removal of air between the particles, which decreases capping potential. The amount of pre-compression force is critical, considering too much force will increase capping. The objective of pre-compression force is to achieve a consolidation of the particles while remove the air</p>   |

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|              |        |              |        |              |        |              |        | <p>but not creating a bond between particles. The 10% of main compression force “rule of thumb” does not always work.</p> <p>Another parameter to adjust on the manufacturing press to reduce capping is punch penetration. The punch penetration determines where in the die the tablet is compressed. Since air travels upward during compression and air escapes between the upper punch tip and die, the higher the penetration, the less travel length the air must escape, thus reducing capping potential.</p> <p>Decreasing main compression force can also reduce capping. During the development process, formulation scientists should understand the failure points of their product.</p> <p>Once a tablet has reached its maximum compactibility, it won't increase in strength with compression force. Instead, this action results in capping. In this case, reducing the compression force can fix capping issues.</p> <p>Decreasing the manufacturing press turret speed is another possible way to reduce capping. An acceptable tablet strength might be achieved on a small R&amp;D press, but when transferred to large scale, the tablet is made at a higher compression rate or lower dwell time. If a material's robustness is impacted by the speed at which it is compressed, it's known to be strain-rate sensitive. These materials require slower turret speeds.</p> <p>.16-Apr-2020<br/> <a href="https://www.manufacturingchemist.com/news/article_page/Resolving_capping_issues_in_tablet_manufacturing/164186">https://www.manufacturingchemist.com/news/article_page/Resolving_capping_issues_in_tablet_manufacturing/164186</a><br/>                     Resolving capping issues in tablet manufacturing</p> |
| 5            | C      | 21           | D      | 28           | A      | 45           | B      | <p>Maillard browning products formed in lactose hydrolysed milk system and their detection. Maillard browning, also known as non-enzymatic browning is a reaction</p>  |

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|              |        |              |        |              |        |              |        | between reducing sugars and protein. Reducing sugar and amino acids after condensation undergo a series of reactions to form various MRP's (Hodge, 1953).  |
| 6            | D      | 22           | A      | 29           | B      | 46           | C      | Mottling is the term used to describe an unequal distribution of color on a tablet, with light or dark spots standing out on an otherwise uniform surface. This type of tablet defect occurs in tablet formulation with a dry coloring agent.<br>02-Mar-2023<br><u>Tablet defects - Pharma Education</u><br><u>Pharma Education</u><br><a href="https://pharmaeducation.net › tablet-defects">https://pharmaeducation.net › tablet-defects</a> |
| 7            | C      | 23           | D      | 30           | A      | 47           | B      | The elasticity of the soft capsule shell depends on the weight ratio of gelatin, plasticizer (typically glycerin, sorbitol or a mixture of the two) to water. Its hardness is determined by the weight ratio of gelatin to plasticizer. 05-Sept-2019.<br>Elasticity and Hardness of Soft Capsule Shell - CapsulCN  |
| 8            | D      | 24           | A      | 31           | B      | 48           | C      | Hard gelatin capsules are made largely from gelatin and sugar, the U.S.P. permitting the gelatin used for this purpose to contain 0.15% sulfur dioxide to prevent decomposition during manufacture. Hard gelatin capsules contain about 9%-12% water but this may vary depending on storage conditions.<br>US4816259A - Process for coating gelatin capsules   |
| 9            | A      | 25           | B      | 32           | C      | 49           | A      | Solutions (Elixirs, Syrup & Solution)<br>•Absorbedmorerapidly<br>•Ratelimitingstep–<br>Gastricemptyingwhendrugisadministered aftermeals<br>•Whensaltformsareused–<br>chancesofprecipitation<br>•Addedsubstancesmayincreaseviscosity–slowdown gastric emptyingandhenceabsorption<br>--Biopharmaceutics Dr Suryaprakash Reddy C Professor of Pharmaceutics Annamacharya College of Pharmacy, Rajampet, AP, India<br>suryaprakashreddyc@gmail.com |

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| 10           | D       | 26           | A       | 33           | B       | 50           | C       | Reason - A drug with a high $V_d$ has a propensity to leave the plasma and enter the extravascular compartments of the body, meaning that a higher dose of a drug is required to achieve a given plasma concentration. (High $V_d$ -> More distribution to other tissue)<br>Volume of Distribution - StatPearls - NCBI Bookshelf<br><a href="https://www.ncbi.nlm.nih.gov/books/NBK545280/">https://www.ncbi.nlm.nih.gov/books/NBK545280/</a>  |
| 11           | B       | 27           | C       | 34           | D       | 1            | A       | The $pK_a$ is a measure of the relative strength (degree of ionization) of a weak acid or base (the $pK_a$ of a drug is that point at which the compound is 50% ionized). The lipid solubility of the uncharged species also depends on the chemical nature of the drug.<br><u><a href="https://www.sciencedirect.com/topics/degree-of-ioniz...">Degree of Ionization - an overview   ScienceDirect Topics</a></u><br><u><a href="https://www.sciencedirect.com/topics/degree-of-ioniz...">ScienceDirect</a></u><br><u><a href="https://www.sciencedirect.com/topics/degree-of-ioniz...">https://www.sciencedirect.com/topics/degree-of-ioniz...</a></u> |
| 12           | Deleted | 28           | Deleted | 35           | Deleted | 2            | Deleted | mg*h/L<br>The area under the plasma drug concentration-time curve (AUC) reflects the actual body exposure to drug after administration of a dose of the drug and is expressed in mg*h/L. This area under the curve is dependant on the rate of elimination of the drug from the body and the dose administered.<br>Area under the Curve – Pharmacokinetics<br>UNIL<br><a href="https://sepia2.unil.ch/pharmacology/parameters/are...">https://sepia2.unil.ch/pharmacology/parameters/are...</a>  |
| 13           | A       | 29           | B       | 36           | C       | 3            | D       | For more than 30 years, FDA has accepted the use of a Limulus Amoebocyte Lysate (LAL) test for endotoxins in lieu of the rabbit pyrogens test. In a November 4, 1977, Federal Register notice (42 FR 57749), FDA described conditions for using LAL as a finished product test.6 By 1983, FDA indicated in guidance that an LAL test could be used as a finished product test for endotoxins.<br>-- Pyrogen and Endotoxins Testing:  |

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|              |        |              |        |              |        |              |        | <p>Questions and Answers</p> <p>U.S. Department of Health and Human Services Food and Drug Administration Center for Drug Evaluation and Research (CDER) Center for Biologics Evaluation and Research (CBER) Center for Veterinary Medicine (CVM) Center for Devices and Radiological Health (CDRH) Office of Regulatory Affairs (ORA) June 2012 Compliance</p> <p>Limulus Amebocyte Lysate (LAL) test received FDA approval in the mid of 1970's. FDA mentioned all the condition for testing finished product, blood products, disposable pharmaceuticals devices and intravenous fluids using LAL. It's almost more than past 30 years, Food and Drug Administration (FDA) had approved the use of LAL test for endotoxins parallel to the rabbit pyrogen test (FDA approval in 1940's). [12,16] USFDA in 1987 has established the guidelines for LAL test in terms of regulatory requirements with amendment in 1991. Similarly, United State Pharmacopoeia (USP), European Pharmacopoeia (EP), Japanese Pharmacopoeia (JP) and Germany has established the guidelines in USP 23, EP Supplement 1998, JP XIII, and 1993 respectively. [17] Indian Pharmacopoeia included monographs for replacement of pyrogen testing for human vaccines and biotech product was included in IP 2014. BET can be used as alternative method instead of pyrogen test for blood products, if validation and consistency is established. [28]</p> <p>-- ATTRIBUTES OF BACTERIAL ENDOTOXIN TEST (BET) AND ITS COMPARISON WITH RABBIT PYROGEN TEST. Shruti Samlet<sup>1</sup>, Kedar Shedage<sup>1</sup>, Paras Jain<sup>2</sup>, Jay Bajarang Singh<sup>2</sup>, Brij Bahadur<sup>2</sup>, Mohit Kumar<sup>2</sup> and Akanksha Bisht<sup>2</sup>.</p> <p>Int. J. Adv. Res. 7(5), 850-857</p> |

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| 14           | B      | 30           | C      | 37           | D      | 4            | A      | Lower the BA of solid higher the density of mixture and thus smaller the capsule size.<br>Pharma Tutor.<br><a href="http://www.pharmatutor.org">www.pharmatutor.org</a> >pharmaceuticals>soft gelatine   |
| 15           | C      | 31           | D      | 38           | A      | 5            | B      | IV can cause serious allergic reactions.<br>Intraspinal can cause serious side effects.<br>IM may not show any results for diagnostics.<br>SC is the best route for diagnostics<br><a href="http://howmed.net/pharmacology/routes-drug-administration">howmed.net/pharmacology/routes-drug-administration</a>  |
| 16           | C      | 32           | D      | 39           | A      | 6            | B      | LARGE VOLUME PARENTERALS:<br>These are supplied for single dose having more than 100 ml. These are delivered through IV route. These generally provide electrolytes, nutrition to the body.(3)<br>-- <a href="https://www.allfordrugs.com/large-volume-parenterals/">https://www.allfordrugs.com/large-volume-parenterals/</a>   |
| 17           | C      | 33           | D      | 40           | A      | 7            | B      | Within the extracellular fluid, the major cation is sodium and the major anion is chloride. The major cation in the intracellular fluid is potassium. These electrolytes play an important role in maintaining homeostasis.<br><u>The major electrolytes: sodium, potassium, and chloride</u><br><a href="http://NationalInstitutesofHealth.gov">National Institutes of Health (.gov)</a><br><a href="https://pubmed.ncbi.nlm.nih.gov">https://pubmed.ncbi.nlm.nih.gov</a> > ... |
| 18           | D      | 34           | A      | 41           | B      | 8            | C      | Electrolytes and the ECG<br>The American Journal of Cardiology, Vol 12, Issue 5, Nov 1963, p 656-662.  |
| 19           | B      | 35           | C      | 42           | D      | 9            | A      | Hydrous wool fat → adeps lanae. The greasy substance obtained from the wool of the sheep Ovis aries (family Bovidae). Used as an emollient base for creams and ointments. Synonym: hydrous wool fat, lanolin, wool wax. 24-Jul-2022<br>Hydrous wool fat Definition and Examples - Biology Online<br><a href="http://biologyonline.com">biologyonline.com</a><br><a href="https://www.biologyonline.com">https://www.biologyonline.com</a> > dictionary > hydrous-...             |
| 20           | A      | 36           | B      | 43           | C      | 10           | D      | The normal volume of tear in the eye is 7 µl, a non-blinking eye can accommodate a maximum of 30   |

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|              |         |              |         |              |         |              |         | <p><math>\mu\text{l}</math>[2] of the fluid where as a blinking eye can hold only 10 <math>\mu\text{l}</math> of fluid. Both normally and externally added solution are rapidly drained from eye.</p> <p><b><u>Stimuli sensitive hydrogels for ophthalmic drug delivery - NCBI National Institutes of Health (.gov)</u></b><br/> <a href="https://www.ncbi.nlm.nih.gov/articles/PMC3482766">https://www.ncbi.nlm.nih.gov/articles/PMC3482766</a></p> <p>Lachrymal fluid is isotonic with blood having an isotonicity valve corresponding to that of a 0.9% NaCl solution. Ideally, an ophthalmic solution should have this isotonicity valve, but the eye can tolerate isotonicity valves as low as that of a 0.6%NaCl solution and as high as that of a 2% NaCl solution without marked discomfort.</p> <p>Methods of adjusting tonicity and pH values of some drugs and substances. M. Hareesh Reddy<sup>1*</sup>,K.Sambasivarao<sup>2</sup>, Chandrasekhara Rao Baru<br/>                     Int.J.Adv.Res.Biol.Sci.(2016).3(10) : 207-212</p> <p>3.1.1. Pre-corneal fluid drainage<br/>                     Pre-corneal fluid drainage is one of the main reasons for low ocular drug absorption</p> <p>A COMPREHENSIVE INSIGHT ON OCULAR PHARMACOKINETICS<br/>                     Vibhuti Agrahari,<sup>1</sup> Abhirup Mandal,<sup>1</sup> Vivek Agrahari,<sup>1,2</sup> Hoang My Trinh,<sup>1</sup> Mary Joseph,<sup>1</sup> Animikh Ray,<sup>1</sup> Hicheme Hadji,<sup>2</sup> Ranjana Mitra,<sup>1</sup> Dhananjay Pal,<sup>1</sup> and Ashim K. Mitra<sup>1,*</sup><br/> <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5319401/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5319401/</a></p> |
| 21           | Deleted | 37           | Deleted | 44           | Deleted | 11           | Deleted | <p>Tear pH was measured in 44 normal subjects by immersing the lip of a microcombination glass pH probe in the tear fluid in the inferior cul-de-sac. The normal pH range was 6.5 to 7.6; the mean value was 7.0.</p> <p><b><u>Normal human tear pH by direct measurement - PubMed</u></b><br/>                     National Institutes of Health (.gov)<br/> <a href="https://pubmed.ncbi.nlm.nih.gov">https://pubmed.ncbi.nlm.nih.gov</a> &gt; ...</p>  |
| 22           | C       | 38           | D       | 45           | A       | 12           | B       | <p>In a dilute emulsion system of isolated spherical droplets, the</p>  |



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|              |        |              |        |              |        |              |        | <p>cream rate (<math>C_r</math>) can be estimated using Stokes's law, <math>C_r = R^2 (\rho_c - \rho_o) / \eta_c</math>, where R is the radius of the particle, <math>\rho_c</math> is the density of the continuous phase, <math>\rho_o</math> is the density of the dispersed phase, and <math>\eta_c</math> is the viscosity of the continuous phase.</p> <p><b><u>Creaming - an overview   ScienceDirect Topics</u></b><br/> <u>ScienceDirect</u><br/> <a href="https://www.sciencedirect.com/topics/creaming">https://www.sciencedirect.com/topics/creaming</a></p>   |
| 23           | B      | 39           | C      | 46           | D      | 13           | A      | <p>A standard gelatin hard capsule dissolves in the stomach, under normal conditions, within twenty to thirty minutes after swallowing. Depending on the application, different gelatin types or additional process steps can influence the dissolution process.</p> <p><b><u>Hard Capsules everything you need to know - GELITA</u></b><br/> <u>GELITA</u><br/> <a href="https://www.gelita.com">https://www.gelita.com</a> › <u>Hard-Capsules</u></p> <p>HENCE A GELATIN CAPSULE IS BOUND TO DISINTEGRATE, AND DISSOLUTION IS RATE LIMITING STEP</p>   |
| 24           | C      | 40           | D      | 47           | A      | 14           | B      | <p>8/5/23, 2:10 PM creatinine clearance for renal function - Google Search<br/> <a href="https://www.google.com/search?q=creatinine+clearance+for+renal+function&amp;biw=1517&amp;bih=723&amp;sxsrf=AB5stBin9jvVXUOtOQOi76uB-2pAK4xo...">https://www.google.com/search?q=creatinine+clearance+for+renal+function&amp;biw=1517&amp;bih=723&amp;sxsrf=AB5stBin9jvVXUOtOQOi76uB-2pAK4xo...</a> 1/2</p> <p>The creatinine clearance test is an older test used to check your kidneyfunction<br/>         . This test allows your healthcare provider to look at samples of your urine and blood to see how much of the waste product —creatinine — is filtered out by your kidneys.<br/>         16-Oct-2020<br/>         Creatinine Levels: Test, Range &amp; Symptoms of High Creatinine<br/>         Cleveland Clinic<br/> <a href="https://my.clevelandclinic.org/health/diagnostics/16...">https://my.clevelandclinic.org/health/diagnostics/16...</a><br/>         Feedback<br/>         People also ask</p> |

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|              |        |              |        |              |        |              |        | <p>What is normal renal function creatinine clearance?<br/>           What is creatinine clearance function?<br/>           What is creatinine clearance in GFR?<br/>           What is renal function clearance?<br/>           Creatinine Clearance - StatPearls National Institutes of Health (.gov)<br/> <a href="https://www.ncbi.nlm.nih.gov/books/NBK544228">https://www.ncbi.nlm.nih.gov/books/NBK544228</a><br/>           by H Shahbaz · 2022 · Cited by 57</p> <p>—</p> <p>[15] Serum creatinine level for men with normal kidneyfunction is <b>approximately 0.6 to 1.2mg/dL and between 0.5 to 1.1 mg/dL for women.</b>[15] ...<br/>           Introduction ·<br/>           Diagnostic Tests ·<br/>           Testing Procedures ·<br/>           Results, Reporting, and...<br/>           Creatinine clearance and the assessment of renal function<br/>           NPS MedicineWise<br/> <a href="https://www.nps.org.au">https://www.nps.org.au</a><br/>           › australian-prescriber › articles<br/>           by BJ Nankivell · 2001 · Cited by 88</p> <p>—</p> <p><b>Creatinine clearance</b><br/>           has been used for many decades to estimate<br/> <b>GFR</b><br/>           . It involves a 24-hour urine collection to measure creatinine excretion. As the...<br/>           Creatinine clearance test<br/>           UCSF Health<br/> <a href="https://www.ucsfhealth.org">https://www.ucsfhealth.org</a><br/>           › medical-tests › creatinine...<br/>           07-Jul-2019</p> <p>—</p> <p>The creatinine clearance test <b>helps provide information about how well the kidneys are working</b><br/>           . The test compares the creatinine</p> |

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|              |        |              |        |              |        |              |        | <p>level in urine ...<br/>           Creatinine Clearance Blood Test<br/>           WebMD<br/> <a href="https://www.webmd.com">https://www.webmd.com</a><br/>           › A to Z Guides › Reference<br/>           14-Nov-2022</p> <p>—</p> <p>Creatinine Test Results ·<br/> <b>Stage 1: GFR 90 or greater</b><br/>           (normal kidney function) · Stage 2:<br/>           GFR 60-89 · Stage 3a: GFR 45 - 59<br/>           (mild kidney disease).<br/>           Normal Kidney Function and...</p> <p>·</p> <p>How Is a Creatinine Test Done?<br/>           Creatinine Clearance (Cockcroft-Gault Equation)<br/>           MDCalc<br/> <a href="https://www.mdcalc.com">https://www.mdcalc.com</a><br/>           › calc › creatinine-clearance-...<br/>           Calculates CrCl according to the<br/>           Cockcroft-Gault equation.<br/>           INSTRUCTIONS. For use in<br/>           patients with stable<br/> <b>renal function</b><br/>           to estimate<br/> <b>creatinine clearance</b></p> <p>·<br/>           creatinine clearance for renal<br/>           function</p> |
| 25           | B      | 41           | C      | 48           | A      | 15           | B      | <p>Parenteral route means complete absorption; hence part (A) is not possible.<br/>           Site of action is lumen: does not ensure that drug is excreted in feces<br/>           How are drugs excreted in faeces?<br/>           The liver can actively secrete ionized drugs with a molecular weight greater than 300 g/mol into bile, from where they reach the digestive tract and are either eliminated in feces or reabsorbed as part of the enterohepatic cycle.<br/> <b>Drug Elimination - StatPearls - NCBI Bookshelf</b><br/> <a href="https://www.ncbi.nlm.nih.gov/books">National Institutes of Health (.gov)</a><br/> <a href="https://www.ncbi.nlm.nih.gov/books">https://www.ncbi.nlm.nih.gov</a> ›<br/> <a href="https://www.ncbi.nlm.nih.gov/books">books</a> › NBK547662</p>  |
| 26           | C      | 42           | D      | 49           | A      | 16           | B      | <p><b>BCG vaccine</b>, <u>vaccine</u> against <u>tuberculosis</u> is. The BCG vaccine is prepared from a weakened strain of <i>Mycobacterium bovis</i>, a bacteria</p>  |

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| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |
|              |        |              |        |              |        |              |        | closely related to <i>M. tuberculosis</i> , which causes the disease.<br><a href="https://www.britannica.com/science/BCG-vaccine">https://www.britannica.com/science/BCG-vaccine</a>  |
| 27           | A      | 43           | B      | 50           | C      | 17           | A      | As a critical part of prophylaxis, passive immunity today entails the infiltration of the wound with RIG, which contains specific virus neutralizing antibodies. The source of these immune globulins may be obtained from vaccinated humans or domestic animals, such as horses.05-May-2020<br><u>Passive Immunity in Rabies Prophylaxis   SpringerLink Springer</u><br><a href="https://link.springer.com › Rabies and Rabies Vaccines">https://link.springer.com › Rabies and Rabies Vaccines</a>  |
| 28           | B      | 44           | C      | 1            | D      | 18           | A      | Is toxoid prepared from endotoxin or exotoxin?<br>As exotoxins are thermolabile, they can be inactivated by heat or chemical treatment, producing a toxoid. In a toxoid the toxicity has been deactivated, so that it can be used to produce antitoxins and vaccination.<br><a href="https://www.biotest.com/de/en/service_navigation/lexikon/trimodulin-background.cfm?term=21968">https://www.biotest.com/de/en/service_navigation/lexikon/trimodulin-background.cfm?term=21968</a><br>biotest.com<br><a href="https://www.biotest.com › service_navigation › trimoduli..">https://www.biotest.com › service_navigation › trimoduli..</a> |
| 29           | C      | 45           | D      | 2            | A      | 19           | B      | What is an adjuvant and why is it added to a vaccine? An adjuvant is an ingredient used in some vaccines that helps create a stronger immune response in people receiving the vaccine. In other words, adjuvants help vaccines work better. 27-Sept-2022<br><u>Adjuvants - Vaccine Safety - CDC Centers for Disease Control and Prevention (.gov)</u><br><a href="https://www.cdc.gov › vaccinesafety › concerns › adjuva.">https://www.cdc.gov › vaccinesafety › concerns › adjuva.</a>  |
| 30           | B      | 46           | A      | 3            | B      | 20           | A      | An absorption base is an oleaginous composition containing an emulsifier or emulsifiers such that the composition is capable of absorbing water to form an emulsion of the water-in-oil type. It may be used as all or a part of the  |

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks  |
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| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |  |
|              |        |              |        |              |        |              |        | oleaginous material of an emulsion suitable for cosmetics, ointments, etc.<br>US2372807A - Absorption bases - Google Patents<br>Google Patents<br><a href="https://patents.google.com">https://patents.google.com</a> › patent   |
| 31           | D      | 47           | A      | 4            | B      | 21           | C      | Water-soluble bases are made of carbowax or polyethylene glycol (PEG) as the base. They are oil/lipid free and non/less occlusive. However, they may absorb water from the skin, thus dehydrating the skin, and may hinder percutaneous absorption.<br><b><u>Ointments and Types of ointment bases - Pharmaceutical</u></b><br><a href="https://www.pharmacy180.com">pharmacy180.com</a><br><a href="https://www.pharmacy180.com">https://www.pharmacy180.com</a> › article › ointments-and.   |
| 32           | B      | 48           | C      | 5            | D      | 22           | A      | Colloid mills work on the rotor-stator principle: a rotor turns at high speeds (2000 - 18000 RPM). A high level of hydraulic shear stress is applied on the fluid which results in disrupting and breaking down the structure <b><u>Colloid mill- Wikipedia</u></b><br><a href="https://en.wikipedia.org">Wikipedia</a><br><a href="https://en.wikipedia.org">https://en.wikipedia.org</a> › wiki › Colloid_mill<br><br>Silverson mixer emulsifiers use high-speed rotors to create turbulence and intense shearing forces. Through the turbulence created by the perforated metal sheets, the liquid passes through fine interstices. Suction from the bottom of the head causes material to circulate through the head.<br>20-Feb-2007<br><br><b><u>Principle, Construction, Working, Uses, Merits and Demerits of ...</u></b><br><a href="https://www.pharmaguideline.com">Pharmaguideline</a><br><a href="https://www.pharmaguideline.com">https://www.pharmaguideline.com</a> › 2007/02 › principle...<br><br><a href="https://www.hielscher.com">Hielscher Ultrasonics</a><br><a href="https://www.hielscher.com">https://www.hielscher.com</a> › homogenizers-working-p...<br>Homogenizers are a type of mixers, which <b><i>apply mechanical forces to</i></b> |

| Series-A  |   | Series-B     |        | Series-C     |        | Series-D     |        | Remarks   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
|---|---|--------------|--------|--------------|--------|--------------|--------|---|-------------------------------|---------------------------------|---|---|------------------------------------|------------------------------------|----------------------------------|---------------------------------------|---|---|---------------------------|--------------------------|---|--|---|---|
| Question No.  | Answer  | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
|   |   |              |        |              |        |              |        | <p><b>blend, emulsify, disperse, and dissolve</b> liquid-liquid and solid-liquid systems.</p> <p><u>Homogenizer - My History with the Sonolator   Sonic Corporation</u><br/> <a href="http://sonicmixing.com">sonicmixing.com</a><br/> <a href="https://www.sonicmixing.com">https://www.sonicmixing.com</a> › blog › homogenizer-h...</p> <p>05-Jul-2017 — The Pohlman Whistle could generate this ultrasonic <b>energy by directing a liquid stream at high velocity over a blade-like reed set in the liquid.</b></p>  |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| 33  | C   | 49           | D      | 6            | A      | 23           | B      | <p>HLB; According to Griffin, the amphiphilic molecule is the value obtained by dividing the weight percentage of the hydrophilic part by five.</p> <p><u>11.2. HLB Value and Calculation</u><br/> Ankara Üniversitesi Açık Ders Malzemeleri<br/> <a href="https://acikders.ankara.edu.tr">https://acikders.ankara.edu.tr</a> › resource › view</p>   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| 34  | B   | 50           | C      | 7            | D      | 24           | A      | <table border="0"> <tr> <td><b>Flocculated suspension</b></td> <td><b>Deflocculated suspension</b></td> </tr> <tr> <td>Particles form a loose aggregate (floccules) and form a network-like structure.</td> <td>Particles exist as separate entities and do not form floccules.</td> </tr> <tr> <td>The rate of sedimentation is high.</td> <td>The rate of sedimentation is slow.</td> </tr> <tr> <td>Sediment is easy to re-disperse.</td> <td>Sediment is difficult to re-disperse.</td> </tr> <tr> <td>Sediment is loosely packed and does not form a hard cake.</td> <td>Sediment is tightly packed and forms a hard cake.</td> </tr> <tr> <td>The supernatant is clear.</td> <td>The supernatant is hazy.</td> </tr> <tr> <td>Floccules stick to the sides of the bottle.</td> <td>Particles do not stick to the sides of the bottle.</td> </tr> <tr> <td>The suspension is not pleasing in appearance.</td> <td>The suspension is pleasing in appearance.</td> </tr> </table> <p><b>FORMULATION AND BIO-AVAILABILITY PARAMETERS OF</b></p> | <b>Flocculated suspension</b> | <b>Deflocculated suspension</b> | Particles form a loose aggregate (floccules) and form a network-like structure. | Particles exist as separate entities and do not form floccules. | The rate of sedimentation is high. | The rate of sedimentation is slow. | Sediment is easy to re-disperse. | Sediment is difficult to re-disperse. | Sediment is loosely packed and does not form a hard cake. | Sediment is tightly packed and forms a hard cake. | The supernatant is clear. | The supernatant is hazy. | Floccules stick to the sides of the bottle. | Particles do not stick to the sides of the bottle. | The suspension is not pleasing in appearance. | The suspension is pleasing in appearance. |
| <b>Flocculated suspension</b>   | <b>Deflocculated suspension</b>                                 |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| Particles form a loose aggregate (floccules) and form a network-like structure. | Particles exist as separate entities and do not form floccules. |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| The rate of sedimentation is high.  | The rate of sedimentation is slow.                              |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| Sediment is easy to re-disperse.  | Sediment is difficult to re-disperse.                           |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| Sediment is loosely packed and does not form a hard cake.                       | Sediment is tightly packed and forms a hard cake.               |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| The supernatant is clear.   | The supernatant is hazy.  |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| Floccules stick to the sides of the bottle.                                     | Particles do not stick to the sides of the bottle.              |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |
| The suspension is not pleasing in appearance.                                   | The suspension is pleasing in appearance.                       |              |        |              |        |              |        |   |                               |                                 |   |   |                                    |                                    |                                  |                                       |   |   |                           |                          |   |  |   |   |

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks   |
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| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |
|              |        |              |        |              |        |              |        | <b>PHARMACEUTICAL SUSPENSION</b><br><b>PAKPI DOYE, TANYA MENA, NILIMANKA DAS*</b><br><b>Int J Curr Pharm Res, Vol 9, Issue 3, 8-14</b>  |
| 35           | A      | 1            | B      | 8            | C      | 25           | D      | Traditional wound dressing. Traditional wound dressing products including gauze, lint, plasters, bandages (natural or synthetic) and cotton wool are dry and used as primary or secondary dressings for protecting the wound from contaminations [30].28-Nov-2015<br><b><u>Wound dressings – a review - PMC - NCBI</u></b><br><a href="https://www.ncbi.nlm.nih.gov/articles/PMC4662938">National Institutes of Health (.gov) https://www.ncbi.nlm.nih.gov/articles/PMC4662938</a><br><b><u>AND</u></b><br><a href="http://www.vernacare.com">www.vernacare.com</a> |
| 36           | A      | 2            | B      | 9            | C      | 26           | D      | <b>Types of absorbable sutures</b><br>Gut. This natural monofilament suture is used for repairing internal soft tissue wounds or lacerations. ...<br>Polydioxanone (PDS). ...<br>Poliglecaprone (MONOCRYL). ...<br>Polyglactin (Vicryl).<br>06-Apr-2018<br><b><u>Surgical Suture: Types, Vs. Stitches, More - Healthline</u></b><br><a href="https://www.healthline.com/health/sutures">Healthline https://www.healthline.com/health/sutures</a>  |
| 37           | B      | 3            | C      | 10           | D      | 27           | A      | Crepe bandage is elastic, but contains no rubber. Its elasticity is due to a special weave that allows it to stretch to practically twice its length, even after repeated launderings.01-Nov-2014<br><b><u>An overview of crepe bandages - Textile Today</u></b><br><a href="https://www.textiletoday.com.bd/an-overview-of-crepe..">Textile Today https://www.textiletoday.com.bd/an-overview-of-crepe..</a>   |
| 38           | D      | 4            | D      | 11           | D      | 28           | D      | Biopharmaceutics and Pharmacokinetics -- A Treatise Brahmankar.pdf, p 33-34   |
| 39           | C      | 5            | D      | 12           | A      | 29           | B      | What are the main characteristics of active transport?<br>Active transport systems are characterized by (1) movement of solutes against a concentration or  |

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks   |
|--------------|--------|--------------|--------|--------------|--------|--------------|--------|---|
| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |
|              |        |              |        |              |        |              |        | <p>electrochemical gradient, (2) saturation at high solute concentration, (3) specificity for structural and/or chemical features of the solute, (4) competitive inhibition by molecules transported by the same transporter, and ...</p> <p><u>Active Transport - an overview   ScienceDirect Topics</u><br/> <a href="https://www.sciencedirect.com/topics/active-transport">sciencedirect.com</a><br/> <a href="https://www.sciencedirect.com/topics/active-transport">https://www.sciencedirect.com/topics/active-transport</a></p>   |
| 40           | D      | 6            | A      | 13           | B      | 30           | C      | <p>Que. A co-solvent used in the preparation of parenteral products is</p> <ul style="list-style-type: none"> <li>• A. Phenol</li> <li>• B. Methyl alcohol</li> <li>• C. Dimethyl acetamide</li> <li>• D. None of these</li> </ul> <p>Right Answer is :<br/> ✓ C. Dimethyl acetamide</p> <p><a href="https://www.studyvidya.com/question/24870/a-co-solvent-used-in-the-preparation-of-parenteral-products">https://www.studyvidya.com/question/24870/a-co-solvent-used-in-the-preparation-of-parenteral-products</a></p>   |
| 41           | D      | 7            | D      | 14           | D      | 31           | D      | <p><b>Ostwald ripening</b> is a phenomenon observed in <u>solid solutions</u> or <u>liquid sols</u> that describes the change of an inhomogeneous structure over time, i.e., small crystals or sol particles dissolve, and redeposit onto larger crystals or sol particles.<sup>[3]</sup></p> <p>Ostwald ripening<br/> <a href="https://en.wikipedia.org/wiki/Ostwald_ripening">https://en.wikipedia.org/wiki/Ostwald_ripening</a></p> <p><u>The Quantification and Evolution of Particle Characteristics ...</u><br/> MDPI<br/> <a href="https://www.mdpi.com">https://www.mdpi.com</a> › ...<br/> by J Zhou · 2022 — It shows that total <b>particle size</b> index <b>increases</b> with freeze–thaw <b>cycles</b>. The initial freeze–thaw <b>cycles</b> have a greater degree of influence on total particle ...</p> <p>Suspensions-Aqueous Vehicles-<br/> Due to use of a wrong polymorph of a drug, a phase conversion from the metastable to stable polymorph may occur. This produces : (a) Crystal growth, resulting in undesirable particle size distribution.</p> <p>Pharmaceutical Applications of</p> |



| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks  |
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| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |  |
|              |        |              |        |              |        |              |        | Polymorphism JOHN HALEBLIAN and WALTER McCrone<br>Journal of Pharmaceutical Sciences<br>AUGUST 1969 VOLUME 58<br>NUMBER 8  |
| 42           | C      | 8            | D      | 15           | A      | 32           | B      | The principle involved in the water attack test is to determine whether the alkali leached from the surface of a container is within the specified limits or not. Since the inner surface is under test entire container (ampoule) has to be used.<br><u>Quality control testing of packaging materials</u><br>Rajiv Gandhi Proudयोगiki Vishwavidyalaya<br><a href="https://www.rgpv.ac.in">https://www.rgpv.ac.in</a> › campus › <u>Quality contro...</u><br>PDF  |
| 43           | B      | 9            | C      | 16           | D      | 33           | A      | Why suspension is not suitable for IV administration?<br>Indeed, when administered intravenously, the suspensions present an increased risk of venous embolism [103] and the emulsions present an increased risk of liver, immunologic dysfunctions, and fat embolism [8,56,104].<br><b><u>Suspensions for intravenous (IV) injection: A review of development ...</u></b><br><a href="https://www.researchgate.net/publication/5507885_S..">researchgate.net</a><br><a href="https://www.researchgate.net/publication/5507885_S..">https://www.researchgate.net</a> › publication › 5507885 S.. |
| 44           | A      | 10           | B      | 17           | C      | 34           | D      | Oil in water emulsion can easily be diluted with an aqueous solvent whereas water in oil emulsion can be diluted with an oily liquid. Cobalt Chloride Test: When a filter paper soaked in cobalt chloride solution is dipped into an emulsion and dried, it turns from blue to pink, indicating that the emulsion is o/w type.<br>20-Apr-2020<br><b>Cobalt chloride test Archives - Emulsions - The Fact Factor</b><br>The Fact Factor<br><a href="https://thefactfactor.com">https://thefactfactor.com</a> › tag › cobalt-chloride-test   |
| 45           | B      | 11           | C      | 18           | D      | 35           | A      | What is Covaxin and how it works?<br>COVAXIN is an inactivated vaccine obtained from the SARS-CoV-2 strain, which was isolated at  |

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks   |
|--------------|--------|--------------|--------|--------------|--------|--------------|--------|---|
| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |
|              |        |              |        |              |        |              |        | <p>the NIV, an Indian virology research institute located in Pune. The vaccine works by stimulating the immune system to produce antibodies against the inactivated SARS-CoV-2 strain.28-Jun-2022</p> <p><b><u>COVAXIN (BBV152) for the Treatment of Covid-19, India</u></b></p> <p><u>Clinical Trials Arena</u><br/> <a href="https://www.clinicaltrialsarena.com">https://www.clinicaltrialsarena.com</a> &gt; Projects</p>   |
| 46           | A      | 12           | B      | 19           | C      | 36           | D      | <p>Antiserum, blood serum that contains specific antibodies against an antigen (foreign agent), such as an infective organism or poisonous substance.3 days ago</p> <p><b><u>Antiserum   Description, Production, &amp; Uses - Britannica</u></b></p> <p><u>Britannica</u><br/> <a href="https://www.britannica.com">https://www.britannica.com</a> &gt; ... &gt; <u>Medicine</u></p>   |
| 47           | B      | 13           | C      | 20           | D      | 37           | A      | <p>What is the role of sodium metabisulphite in cream?</p> <p>Sodium metabisulfite is commonly used in cosmetics and personal care products as a preservative and antioxidant. It helps to prevent the formulations from going bad and losing their effectiveness by protecting them from the damaging effects of oxygen. <b>SODIUM METABISULFITE STRONGLY IRRITATES SKIN AND TISSUE.</b></p> <p><b>Pubchem.ncbi.nlm.nih.gov/compound/sodiummetabisulfite#section=physical-description</b></p> <p><b><u>Sodium Metabisulfite (Antioxidant) - Cosmetics Ingredients</u></b></p> <p><u>SpecialChem S.A.</u><br/> <a href="https://cosmetics.specialchem.com">https://cosmetics.specialchem.com</a> &gt; inci-ingredients</p> <p>What is propyl gallate in cosmetics?</p> <p>Propyl Gallate is an antioxidant preservative used in a wide variety of cosmetics and beauty care products, including lipsticks, bath products, skin cleansing products, moisturizers, skin care products, makeup products, self-tanning products, and sunscreen and suntan products.</p> |

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks  |
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| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |  |
|              |        |              |        |              |        |              |        | <p><b><u>Propyl Gallate - Truth In Aging</u></b><br/> <a href="http://truthinaging.com">truthinaging.com</a><br/> <a href="https://www.truthinaging.com › ingredients › propyl-gall">https://www.truthinaging.com › ingredients › propyl-gall.</a></p> <p>What is the function of BHT in cream?<br/>           Butylated Hydroxytoluene or BHT is a stabiliser that can be found in cosmetic products. It acts as an antioxidant that helps maintain the properties and performance of a product as it is exposed to air (to avoid a change in odor, in color, in texture...).</p> <p><b><u>BHT - Ingredient   Inside our products - L'Oréal</u></b><br/> <a href="http://loreal.com">loreal.com</a><br/> <a href="https://inside-our-products.loreal.com › ingredients › bht">https://inside-our-products.loreal.com › ingredients › bht</a></p> <p>BHA plays the role to unglue and loosen the bonds between the dead skin on the surface. Once these bonds are broken gently and evenly, skin naturally sheds these dead cells. You won't see your skin exfoliating but you can see the change in the texture of your skin.13-Jul-2020</p> <p><b><u>What is bha full form and its Benefits for Skin - Derma Essentia</u></b><br/> <a href="http://Derma Essentia">Derma Essentia</a><br/> <a href="https://www.dermaessentia.com › blogs › skin-care › bha">https://www.dermaessentia.com › blogs › skin-care › bha</a></p> |
| 48           | C      | 14           | D      | 21           | A      | 38           | B      | PharmaEducation<br><a href="https://pharmaeducation.net&gt;quality-control-te-of-tab...">https://pharmaeducation.net&gt;quality-control-te-of-tab...</a>   |
| 49           | B      | 15           | C      | 22           | A      | 39           | B      | Another stress-related problem is <i>logo-bridging</i> (i.e., bridging of coating across monograms present in the surface of the tablet core), which occurs when the internal stresses can overcome the adhesive bonds formed between the coating and the tablet surface, causing the film to pull away so that legibility of the monogram is lost.<br><a href="https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/film-coating">https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/film-coating</a>   |

| Series-A     |        | Series-B     |        | Series-C     |        | Series-D     |        | Remarks   |
|--------------|--------|--------------|--------|--------------|--------|--------------|--------|---|
| Question No. | Answer | Question No. | Answer | Question No. | Answer | Question No. | Answer |   |
| 50           | B      | 16           | C      | 23           | D      | 40           | A      | <p>Enteric coating is a common procedure in the development of oral pharmaceutical dosage forms. The main advantage of enteric coating is that it protects the drug from acidic pH and enzymatic degradation in the stomach while protecting it from the undesirable effects of some drugs.</p> <p>01-Oct-2019</p> <p><b>Enteric coating of oral solid dosage forms as a tool to improve ...</b></p> <p>National Institutes of Health (.gov)<br/> <a href="https://pubmed.ncbi.nlm.nih.gov">https://pubmed.ncbi.nlm.nih.gov</a> › ...</p> |