

1209

ALL KERALA BHAVAN'S SCHOLARSHIP EXAMINATION 2015-2016

CLASS: XII (SCIENCE)

TIME: 90 Min.

MARKS: 100

SECTION - A
ENGLISH

- Raj Kumar Shukla was :
a) a sharecropper b) a politician c) a delegate d) a landlord
- Edla Wilmanson was :
a) cautious b) compassionate c) suspicious d) unkind
- Which of the following is a fear of water?
a) Claustrophobia b) Xenophobia c) Hydrophobia d) Anglophobia
- The word 'pacifism' means:
a) promoting peace b) offering solace
c) promoting war d) working for progress
- Much of South America was _____ when diseases were introduced by migrant Europeans.
a) enraged b) ravaged c) savaged d) engaged
- The vicar in the story 'The Invisible Man' is:
a) Mr. Bunting b) Mr. Teddy Henfrey c) Dr. Kemp d) Mr. Fearenside
- I don't like it when news readers start giving their _____ opinions about the news. That is not their job.
a) substantial b) subjugated c) subversive d) subjective
- The phrase 'going places' mean:
a) an adventurous journey b) travelling to exotic places
c) deportation d) becoming popular or famous

PHYSICS

- In a circuit, L, C, and R connected in series with an alternating voltage source of frequency f. The current leads the voltage by 45°. The value of C is _____.
a) $\frac{1}{\pi f (2\pi f L - R)}$ b) $\frac{1}{2\pi f (2\pi f L - R)}$ c) $\frac{1}{\pi f (2\pi f L + R)}$ d) $\frac{1}{2\pi f (2\pi f L + R)}$
- When a ray of light enters from one medium to another, its velocity is doubled. The critical angle for the total internal reflection will be _____.
a) 30° b) 60° c) 90° d) information is incomplete
- Two thin long parallel wires separated by a distance 'b' are carrying current 'I A' each. The magnitude of the force per unit length will be;
a) $\frac{\mu_0 I^2}{b^2}$ b) $\frac{\mu_0 I^2}{2\pi b}$ c) $\frac{\mu_0 I}{2\pi b^2}$ d) $\frac{\mu_0 I}{2\pi b}$
- Four charges, each equal to '-Q', are placed at the four corners of a square and a charge 'q' is at its centre. If the system is in equilibrium, then value of 'q' is:
a) $-\frac{Q}{4}(1+2\sqrt{2})$ b) $-\frac{Q}{2}(1+2\sqrt{2})$ c) $\frac{Q}{4}(1+2\sqrt{2})$ d) $\frac{Q}{2}(1+2\sqrt{2})$

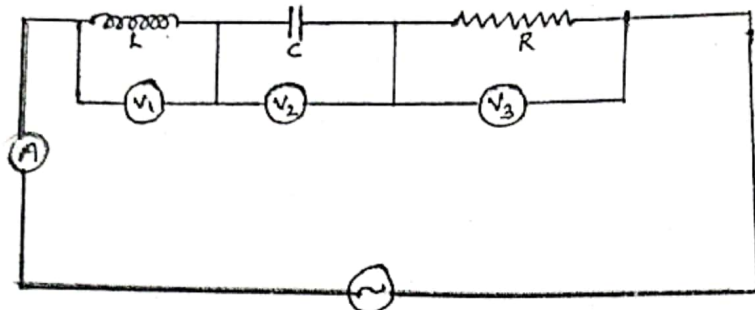
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13. A particle of charge 'q' and mass 'm' moves in a circular orbit of radius 'r' with angular speed ' ω '. The ratio of the magnitude of its magnetic moment to that of its angular momentum depends on;

- a) ω and q b) ω , q and m c) q and m d) ω and m

14. In the given circuit, the readings of volt meters V_1 and V_2 are 300 volts each, the readings of the volt meter V_3 and ammeter A are respectively.

- a) 100V, 2.0 A b) 150V, 2.2A c) 220V, 2.2 A d) 220V, 2.0 A



15. When monochromatic red light is used instead of blue light in convex lens, its focal length will _____.

- a) decrease b) remains same
c) does not depend upon colour d) increase

16. The length of given cylindrical wire is increased by 100%. Due to consequent decrease in diameter, the change in resistance of the wire will be:

- a) 200% b) 100% c) 50% d) 300%

CHEMISTRY

17. Freshly prepared precipitate sometimes gets converted to colloidal solution by _____.

- a) coagulation b) electrolysis c) diffusion d) peptization

18. Nickel is purified by thermal decomposition of its _____.

- a) Chloride b) Carbonyl c) Azide d) Iodide

19. The diamagnetic species is _____.

- a) $[\text{Ni}(\text{CN})_4]^{2-}$ b) $[\text{NiCl}_4]^{2-}$ c) $[\text{CoCl}_4]^{2-}$ d) $[\text{CoF}_6]^{2-}$

20. The commercial name of Polyacrylonitrile is _____.

- a) Dacron b) Orlon c) PVC d) Bakelite

21. Ethylbromide reacts with Silver nitrate to form _____.

- a) Nitroethane b) Ethane
c) Nitro ethane and Silver bromide d) Ethylnitrite

22. The absorption of hydrogen on Pd metal is called _____.

- a) Hydrogenation b) Occlusion c) Reduction d) Hydration

23. Which is the least reactive in nucleophilic substitution reaction?

- a) $(\text{CH}_3)_2\text{CHCl}$ b) $\text{CH}_2=\text{CHCl}$
c) $\text{CH}_3\text{CH}_2\text{Cl}$ d) $\text{CH}_2=\text{CHCH}_2\text{Cl}$

24. Benzylamine reacts with HNO_2 to form _____.

- a) Azobenzene b) Benzene c) Benzyl alcohol d) Phenol

GENERAL KNOWLEDGE

25. Name the Indian born person who was appointed as the C.E.O of the internet giant 'Google' on August 10th 2015?
a) Satyam Nadalle b) Bill Gates c) Shiv Nadar d) Sundar Pichai
26. India's largest public sector commercial bank at present is _____
a) State Bank of India b) Federal Bank
c) Syndicate Bank d) Punjab National Bank.
27. Name India's latest and third Scientific Research Station in Antarctica.
a) Bharati b) Maitri c) Dakshin Gangotri d) Manasarovar
28. Which African city will host the 2022 Common Wealth Games?
a) Pretoria b) Kimberley c) Johannesburg d) Durban
29. ISRO has successfully launched communication GSAT-6 satellite recently by using which rocket vehicle?
a) GSLV-D7 b) GSLV- D8 c) GSLV- D5 d) GSLV-D6

I.Q

30. Complete the series:
6, 13, 25, 51, 101, _____.
a) 201 b) 202 c) 203 d) 205
31. Duster : Chalk
a) Erasure: Writing b) Cloth : Air
c) Blackboard : Chalk d) Sponge: Water
32. In certain code ROAD is written as URDG. How is SWAN written in that code
a) VZCQ b) VXDQ c) VZDQ d) UXDQ
33. Find the odd one out:
a) stone b) granite c) marble d) sandstone
34. Which letter does not belong to this series?
H, D, R, Y, L
a) Y b) L c) R d) D

SECTION - B

Section B comprises 4 parts - Part I, Part II, Part III and Part IV
Answer any two parts only of Section B

PART-I - MATHEMATICS

1. If $\begin{pmatrix} 1 & -\tan\theta \\ \tan\theta & 1 \end{pmatrix} \begin{pmatrix} 1 & \tan\theta \\ -\tan\theta & 1 \end{pmatrix}^{-1} = \begin{pmatrix} a & -b \\ b & a \end{pmatrix}$, then

- a) $a=1, b=1$ b) $a=\cos 2\theta, b=\sin 2\theta$
c) $a=\sin 2\theta, b=\cos 2\theta$ d) None of these

2. $\int x^{\sin x} \left(\frac{\sin x}{x} + \cos x \log x \right) dx$ is equal to _____.

- a) $x^{\sin x} + C$ b) $x^{\sin x} \cos x + C$ c) $\frac{(x^{\sin x})^2}{2} + C$ d) None of these

3. The probability that a man hitting a target is $\frac{3}{4}$. He tries 5 times. The probability that he will hit the target at most one time is :
 a) $(\frac{1}{4})^3$ b) $(\frac{3}{4})^5$ c) $(\frac{1}{4})^2 (\frac{3}{4})^3$ d) None of these
4. Number of points at which $f(x) = \frac{1}{\log|x|}$ is discontinuous is:
 a) 2 b) 3 c) 1 d) 4
5. Evaluate : $\lim_{x \rightarrow 1} \frac{(2x-3)(\sqrt{x}-1)}{(3x^2+3x-6)}$
 a) $\frac{-1}{10}$ b) $\frac{-1}{4}$ c) $\frac{-1}{18}$ d) None of these
6. If $x = e^{y+e^{y+\dots+\infty}}$, $x > 0$, then $\frac{dy}{dx}$ is _____.
 a) $\frac{1-x}{x}$ b) $\frac{1}{x}$ c) $\frac{x}{1+x}$ d) $\frac{1+x}{x}$
7. Solve $\cos^{-1}(\sin(\cos^{-1}x)) = \frac{\pi}{3}$
 a) $\frac{\sqrt{3}}{2}$ b) $\frac{1}{\sqrt{2}}$ c) $\frac{1}{2}$ d) None of these
8. The degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^{2/3} + 4 - 3\frac{dy}{dx} = 0$ is _____.
 a) 2 b) 1 c) 3 d) None of these

PART-II - BIOLOGY

1. Hormones used in suspension culture is:
 a) 2, 4-D b) BAP c) NAA d) GA₃
2. Polyethylene glycol method is used for _____.
 a) gene transfer without a vector b) bio-diesel production
 c) seedless fruit production d) energy production from sewage
3. Connecting link between annelids and molluscs is:
 a) Neopilina b) Peripatus c) Periplaneta d) Limulus
4. In some viruses DNA is synthesised by using RNA as template. Such a DNA is called:
 a) A-DNA b) B-DNA c) r DNA d) c DNA
5. A bacterial cell was transformed with a recombinant DNA that was generated using a human gene. However that transformed cells did not produce the desired protein. Reason could be:
 a) Human gene may have introns which bacteria cannot process
 b) Amino acid codons for humans and bacteria are different
 c) Human protein is formed but degraded by bacteria
 d) All of the above
6. The historic convention on biological diversity held in Rode Janerio in 1992 is known as :
 a) CITES convention b) The Earth Summit
 c) G-16-Summit d) MAB Programme
7. Significance of heat shock method in bacterial transformation is to facilitate:
 a) Binding of DNA to the cell wall
 b) Uptake of DNA through membrane transport protein
 c) Uptake of DNA through transient pores in the bacterial cell wall
 d) Expression of antibiotic resistant gene

8. Which cannot be detected in developing foetus by aminocentesis:
a) Jaundice
b) Klinefelter's syndrome
c) Sex of foetus
d) Down's syndrome

PART-III - COMPUTER SCIENCE

- The function whose prototype is `void getData(Item*thing);` receives_____.
a) a pointer to a structure
b) a reference to a structure
c) a copy of a structure
d) nothing
- Given a class named Book, which of the following is not a valid constructor?
a) `Book(){};`
b) `Book(Book b) {};`
c) `Book(Book&b) {};`
d) `Book(char* author,char *title){};`
- Which of the following headerfile includes definition of `cin` and `cout`?
a) `istream.h`
b) `ostream.h`
c) `iomanip.h`
d) `iostream.h`
- The term designed to prevent unauthorised access to or from a private network is _____.
a) gateway
b) switch
c) firewall
d) bridge
- If a class C is derived from class B, which is derived from class A, all through public inheritance, then a class C member function can access _____.
a) protected and public data only in C and B.
b) protected and public data only in C.
c) private data only in A and B.
d) protected data in A and B.
- The break statement causes an exit _____.
a) from the innermost loop only
b) only from the innermost switch
c) from all loops and switches
d) from the innermost loop or switch
- this pointer _____.
a) implicitly points to an object
b) can be explicitly used in a class
c) can be used to return an object
d) all of the above
- What would be the output of the following?

```
#include<iostream.h>
void main()
{
char*ptr="abcd"
char ch;
ch=++*ptr++;
}
```


a) a
b) b
c) c
d) d

PART- IV - INFORMATICS PRACTICES

- Name the loop that gets executed atleast once.
a) for
b) do...while
c) while
d) nested loop
- The lifetime of a variable ends when we exit its _____.
a) block
b) function
c) scope
d) none of these

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3. What will be the values of S and X after execution of the following code

```
int S,X;
S=6;
X=5;
S=S+(X++);
```

a) S=10,X=5 b) S=11,X=6 c) S=11,X=5 d) S=10,X=6
4. Which of the following standard is open standard?
a) SVG b) RM c) ASX d) AIFF
5. JVM is what type of language translator?
a) Compiler b) Interpreter
c) Assembler d) both Compiler and Interpreter
6. Which function in MYSQL is used to return the position of first occurrence of a substring?
a) instr() b) substr() c) mid() d) none of these
7. What is required to create a reference to a remote site that is different from creating a local link?
a) The remote attribute b) An extra <a> tag
c) The web address of the remote site d) A link title
8. Which of the following is an Abstract class?
a) JTextArea b) JLabel c) JFrame d) JOptionPane

TIE BREAKER

1. Which of the following stories deals with relation of children with their parents.
a) Going places b) Lost Spring
c) Should wizard hit mommy d) The enemy
2. If n_i is density of intrinsic charge carriers: n_h and n_e are densities of hole and electrons in extrinsic semi conductor, what is the relation among them?
a) $n_e n_h > n_i^2$ b) $n_e n_h \approx n_i^2$ c) $n_e n_h \approx n_i$ d) $n_e n_h < n_i^2$
3. A polymer which is used for stitching wounds after operation:
a) PHBV b) Nylon-2-Nylon-6 c) Dextron d) Dacron
4. FACE is the attribute of which tag:
a) <BODY> b) c) <P> d)
5. Name the mathematician doctor who bagged the prestigious 'Ramayan Prize' for the year 2015?
a) Miguel Wash b) Dr. Amalendu Krishna
c) Tian Ye d) Fernando Coda Marques

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